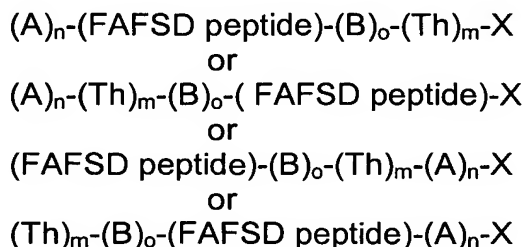


List of Claims

52. (New) A method for inducing anti-FAFSD peptide antibody production in a mammal by administering to said mammal a pharmaceutical composition comprising an immunologically effective amount in the range of 0.25 µg to 1 mg per kilogram body weight per dose of a peptide immunogen comprising a carrier protein covalently attached to a FAFSD target peptide selected from the group consisting of SEQ ID Nos: 4, 6 and 8.
53. (New) A method according to claim 52 wherein the FAFSD target peptide is an analogue thereof that is a crossreactive and immunologically functional analogue for FimH of fimbriae E. coli and is selected from the group consisting of SEQ ID NOs: 5, 7, 86, 87 and 88.
54. (New) A method according to claim 52 wherein the FAFSD target peptide is cyclized.
55. (New) A method according to claim 53 wherein the FAFSD target peptide is cyclized.
56. (New) A method for inducing anti-FAFSD peptide antibody production in a mammal by administering to said mammal a pharmaceutical composition comprising an immunologically effective amount in the range of 0.25 µg to 1 mg per kilogram body weight per dose of a target peptide immunogen represented by the formulas



wherein:

each A is independently an amino acid or an invasin domain, SEQ NO:72;

each B is independently an amino acid or a chemical linker chosen from the group consisting of: amino acids, gly-gly, (α , ϵ -N) Lys, Pro-Pro-Xaa-Pro-Xaa-Pro (SEQ ID NO:73); $\text{NHCH(X)CH}_2\text{SCH}_2\text{CO-}$, $\text{-NHCH(X)CH}_2\text{SCH}_2\text{CO}(\epsilon\text{-N})\text{Lys-}$, $\text{-NHCH(X)CH}_2\text{S-succinimidyl}(\epsilon\text{-N})\text{Lys-}$, and $\text{-NHCH(X)CH}_2\text{S-(succinimidyl)-}$;

each Th is independently a sequence of amino acids that constitutes a helper T cell epitope, or an immune enhancing analog or segment thereof;

The FAFSD peptide is selected from the group consisting of SEQ ID NOS: 3, 6 and 8;

X is α -COOH or α -CONH₂;

n is from 0 to about 10;

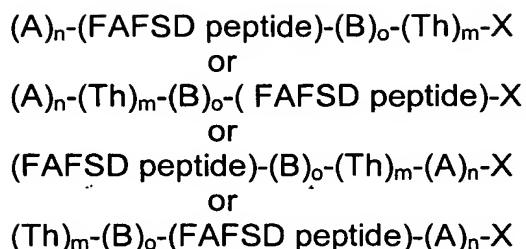
m is from 1 to about 4; and

o is from 0 to about 10.

57. (New) A method according to claim 56 wherein B is an amino acid selected from the group consisting of natural and unnatural amino acids.
58. (New) A method according to claim 56 wherein said Th is a combinatorial Th epitope library.
59. (New) A method according to claim 56 wherein said Th has an amino acid sequence selected from the group consisting of SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NOS:38-39, and SEQ ID NOS:49-50, and SEQ ID NO:67.
60. (New) A method according to claim 56 wherein said peptide immunogen has an amino acid sequence selected from the group consisting of SEQ

ID NOs:74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84 and 85.

61. (New) A method according to claim 56 wherein at least one A is an invasin domain.
62. (New) A method according to claim 56 wherein n is 3, and (A)₃ is (invasin domain)-Gly-Gly.
63. (New) A method for reducing adherence to the urinary tract mucosa of a mammal by type 1 fimbriated uropathogenic enterobacteriae to prevent urinary tract infection by administering to the mammal a pharmaceutical composition comprising an immunologically effective amount in the range of 0.25 µg to 1 mg per kilogram body weight per dose of a peptide immunogen comprising a carrier protein covalently attached to a FAFSD target peptide selected from the group consisting of SEQ ID Nos: 4, 6 and 8.
64. (New) A method according to claim 63 wherein the FAFSD target peptide is an analogue thereof that is a crossreactive and immunologically functional analogue for FimH of fibriae E. coli and is selected from the group consisting of SEQ ID NOs: 5, 7, 86, 87 and 88.
65. (New) A method according to claim 63 wherein the FAFSD target peptide is cyclized.
66. (New) A method according to claim 64 wherein the FAFSD target peptide is cyclized.
67. (New) A method for reducing adherence to the urinary tract mucosa of a mammal by type 1 fimbriated uropathogenic enterobacteriae to prevent urinary tract infection by administering to the mammal a pharmaceutical composition comprising an immunologically effective amount in the range of 0.25 µg to 1 mg per kilogram body weight per dose of a target peptide immunogen represented by the formulas



wherein:

each A is independently an amino acid or an invasin domain with amino acid sequence of SEQ NO:72;

each B is independently an amino acid or a chemical linker chosen from the group consisting of: amino acids, gly-gly, (α , ϵ -N) Lys, Pro-Pro-Xaa-Pro-Xaa-Pro (SEQ ID NO:73); NHCH(X)CH₂SCH₂CO-, -NHCH(X)CH₂SCH₂CO(ϵ -N)Lys-, -NHCH(X)CH₂S-succinimidyl(ϵ -N)Lys-, and -NHCH(X)CH₂S-(succinimidyl)-;

each Th is independently a sequence of amino acids that constitutes a helper T cell epitope, or an immune enhancing analog or segment thereof;

The FAFSD peptide is selected from the group consisting of SEQ ID NOS: 3, 6 and 8;

X is α -COOH or α -CONH₂;

n is from 0 to about 10;

m is from 1 to about 4; and

o is from 0 to about 10.

68. (New) A method according to claim 67 wherein B is an amino acid selected from the group consisting of natural and unnatural amino acids.
69. (New) A method according to claim 67 wherein said Th is a combinatorial Th epitope library.
70. (New) A method according to claim 67 wherein said Th has an amino acid sequence selected from the group consisting of SEQ ID NO:9, SEQ

ID NO:10, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:20, SEQ ID NO:21, SEQ ID NO:28, SEQ ID NO:29, SEQ ID NOS:38-39, and SEQ ID NOS:49-50, and SEQ ID NO:67.

71. (New) A method according to claim 67 wherein said peptide immunogen has an amino acid sequence selected from the group consisting of SEQ ID NOs:74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84 and 85.
72. (New) A method according to claim 67 wherein at least one A is an invasin domain.
73. (New) A method according to claim 67 wherein n is 3, and (A)₃ is (invasin domain)-Gly-Gly.
74. (New) A method according to claim 63 wherein the enterobacteriae is E. coli.
75. (New) A method according to claim 64 wherein the enterobacteriae is E. coli.
76. (New) A method according to claim 65 wherein the enterobacteriae is E. coli.
77. (New) A method according to claim 66 wherein the enterobacteriae is E. coli.
78. (New) A method according to claim 67 wherein the enterobacteriae is E. coli.
79. (New) A method according to claim 68 wherein the enterobacteriae is E. coli.
80. (New) A method according to claim 69 wherein the enterobacteriae is E. coli.
81. (New) A method according to claim 70 wherein the enterobacteriae is E. coli.

82. (New) A method according to claim 71 wherein the enterobacteriae is *E. coli*.
83. (New) A method according to claim 72 wherein the enterobacteriae is *E. coli*.
84. (New) A method according to claim 73 wherein the enterobacteriae is *E. coli*.